General

Guideline Title

The treatment of neck pain-associated disorders and whiplash-associated disorders: a clinical practice guideline.

Bibliographic Source(s)

BussiÃ¨res AE, Stewart G, Al-Zoubi F, Decina P, Descarreaux M, Hayden J, Hendrickson B, HincapiÃ© C, PagÃ© I, Passmore S, Srbely J, Stupar M, Weisberg J, Ornelas J. The treatment of neck pain-associated disorders and whiplash-associated disorders: a clinical practice guideline. J Manipulative Physiol Ther. 2016 Oct;39(8):523-64. [189 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Bryans R, Decina P, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg RP, Shaw L, Watkin R, White E. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. J Manipulative Physiol Ther. 2014 Jan;37(1):42-63. [104 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Definitions for the strength of evidence (High, Moderate, Low, and Very low) and the strength of recommendations (Strong, Weak) are provided at the end of the "Major Recommendations" field.

Recommendations for Recent-Onset (0-3 Months) Grades I to III Neck Pain–Associated Disorder (NAD)

Manual Therapy

Key Question 1

Should neck manipulation versus (vs) neck mobilization be used for recent-onset (0-3 months) grades I to II NAD?

Recommendation

For patients with recent (0-3months) grades I to II NAD, the panel suggests manipulation or mobilization based on patient preference. (*Weak recommendation, low-quality evidence*)

Exercise

Key Question 2

Should integrated neuromuscular inhibition technique be used for recent-onset (0-3 months) grades I to II NAD?

Overall, the panel decided the balance between the desirable and undesirable consequences was uncertain, and more evidence is needed before a recommendation can be made.

Multimodal Care

Key Question 3

Should multimodal care vs intramuscular ketorolac be used for recent (0-3 months) grades I to III NAD?

Overall, the balance between the desirable and undesirable consequences is uncertain and more research is needed in this area before any recommendation can be made.

Exercise

Key Question 4

Should multimodal care vs home exercises vs medication be used for recent-onset (0-3 months) grades I to II NAD?

Recommendation

For patients with recent (0-3 months) neck pain grades I to II, the panel suggests either range-of-motion home exercises, medication, or multimodal manual therapy for reduction in pain and disability. (*Weak recommendation, moderate quality evidence*)

Remark

Home exercises included education self-care advice, exercises, and instruction on activities of daily living. Medication included nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, muscle relaxant, or a combination of these. Multimodal manual therapy included manipulation and mobilization with limited light soft tissue massage, assisted stretching, hot and cold packs, and advice to stay active or modify activity as needed.

Key Question 5

Should supervised graded strengthening exercises vs advice be used for recent-onset (0-3 months) grade III NAD?

Recommendation

For patients with recent (0-3 months) grade III neck and arm pain, the panel suggests supervised graded strengthening exercises* rather than advice alone.† (*Weak recommendation, moderate-quality evidence*)

Remark

*Supervised graded strengthening exercises consisted of strengthening and stability exercises twice a week for 6 weeks with daily home exercises (which included mobility, stability, and muscle strengthening).

†Advice alone consisted of maintaining activity of daily living without specific treatment.

Passive Physical Modalities

Key Question 6

Should cervical collar vs graded strengthening exercise program be used for recent-onset (0-3 months) grade III NAD?

Because of uncertainty about potential for iatrogenic disability associated with the prolonged use of cervical collar, one recommendation made in the current guideline favoring strengthening exercise programs over advice, and the lack of consensus among the guideline panel, the Guideline Development Group (GDG) decided not to make a recommendation against the use of cervical collar. A second vote favored also removing the remark from the recommendation. Choice should be based on patient's preference and management changed if recovery is slow.

Key Question 7

Should low-level laser therapy (LLLT) be used for recent-onset (0-3 months) grade III NAD?

The panel was uncertain about the balance between desirable and undesirable consequences and voted against making a recommendation because of a lack of clear evidence (LLLT was no better than placebo but both groups demonstrated within-group change over time).

Work Disability Prevention Interventions

Key Questions 8 and 9

- Should work disability prevention interventions vs fitness and strengthening exercise program be used for recent-onset nonspecific work-related upper limb disorders?
- Should work disability prevention interventions be used for recent-onset work-related neck and upper limb complaints?

In reviewing the evidence on work disability prevention interventions, the GDG concluded that the balance between desirable and undesirable consequences was "closely balanced or uncertain." As a result, the guideline panel was unable to formulate recommendations for these key questions, yet future research is very likely to either positively or negatively support the various types of work disability prevention interventions.

Recommendations for Recent-Onset (0-3 Months) Grades I to III Whiplash-Associated Disorder (WAD)

Multimodal Care

Key Question 10

Should multimodal care vs education be used for recent (0-3 months) grades I to III WAD?

Recommendation

For adult patients with recent (0-3 months) WAD grades I to III, the panel suggests multimodal care over education alone. (*Weak recommendation, moderate-quality evidence*)

Remark

Multimodal care may consist of manual therapy (joint mobilization, other soft tissue techniques), education, and exercises.

Structured Education

Key Question 11

Should structured patient education vs education reinforcement be used for recent-onset (0-3 months) WAD?

The panel determined this topic and its evidence has substantial overlap with Key Question 10. Therefore, one recommendation was made, addressing both topics.

Recommendations for Persistent (>3 Months) Grades I to III NAD

Exercise

Key Question 12

Should supervised exercise (i.e., qigong exercise) vs no treatment (wait listing) be used for persistent (>3 months) grades I to II NAD?

Recommendation

For adult patients with persistent (>6 months) neck pain grades I to II, the panel suggests supervised group exercises* to reduce neck pain and disability. (*Weak recommendation, moderate-quality evidence*)

Remark

Patients received 18 to 24 group sessions during a period of 4 to 6 months. Patients considered had a rating of 40/100 on a pain scale (visual analog scale [VAS]). The intervention group reached suggested minimal clinically important differences (MCID) level of 10% difference for pain and functional outcomes.

*Exercises included qigong or range of motion (ROM), flexibility, and strengthening exercises. No evidence of significant effect in the elderly population.

Key Question 13

Should supervised yoga vs education be used for persistent (>3 months) grades I to II NAD?

Recommendation

For patients with persistent (>3 months) grades I to II neck pain and disability, the panel suggests supervised yoga over education and home exercises for short-term improvement in neck pain and disability. (*Weak recommendation, low-quality evidence*)

Remark

Baseline intensity of pain was more than 40/100 and duration was at least 3 months. Yoga was specific to the Iyengar type, with a maximum of 9 sessions over 9 weeks.

Key Question 14

Should supervised strengthening exercises vs home ROM or stretching exercises be used for persistent (>3 months) grades I to II NAD?

Recommendation

For patients with persistent (>3 months) grades I to II neck pain, the panel suggests supervised strengthening exercises or home exercises. (*Weak recommendation, low-quality evidence*)

Remark

For reduction in pain, supervised strengthening exercises, provided along with ROM exercises and advice, were evaluated at 12 weeks within 20 sessions. Home exercises include stretching or self-mobilization.

Key Question 15

Should strengthening exercises vs general strengthening exercises be used for persistent (>3 months) grades I to II NAD?

More research is needed in this area before a recommendation can be made.

Key Question 16

Should combined supervised strengthening, ROM, and flexibility exercises vs no treatment (wait listing) be used for persistent (>3 months) grades I to II NAD?

The panel determined this topic and its evidence has substantial overlap with Key Question 12 (qigong was considered exercise). Therefore, one recommendation was made, addressing both topics.

Manual Therapy

Key Question 17

Should multimodal care vs self-management be used for persistent (>3 months) grades I-II NAD?

Recommendation

For patients with persistent (>3 months) neck pain and associated disorders grades I to II, the panel suggests multimodal care* or stress self-management† based on patient preference, prior response to care, and resources available. (*Weak recommendation, low-quality evidence*)

Remark

*Individualized multimodal care may include manual therapy (manipulation, mobilization, massage, traction), acupuncture, heat, transcutaneous electrical nerve stimulation, exercise, and/or ultrasound.

†Stress self-management may include relaxation, balance and body awareness exercises, pain and stress self-management lectures, and discussion. The multimodal care group received an average of 7 (range 4-8) sessions, compared with 11 (range 1-52) sessions for the stress self-management group over 20 weeks.

Education

Key Question 18

Should structured patient education vs massage therapy be used for persistent (>3 months) NAD?

Additional high-quality studies are needed in this area before any recommendation can be made.

Manual Therapy

Key Question 19

Should manipulation be used for persistent grades I to II NAD?

Recommendation

For patients with persistent grades I to II NAD, the panel suggests manipulation in conjunction with soft tissue therapy. (*Weak recommendation, low-quality evidence*)

Remark

Evaluated after eight 20-minute sessions (over a 3-week period). Does not include manipulation as a stand-alone treatment.

Key Question 20

Should massage vs no treatment (wait listing) be used for persistent (>3 months) grades I to II NAD?

Recommendation

For patients with persistent (>3 months) grades I to II NAD, the panel suggests high-dose massage over no treatment (wait listing) based on patient preferences and resources available. (*Weak recommendation, low-quality evidence*)

Remark

Interventions were given 3 times for 60 minutes a week for 4 weeks. Lower dosages and duration did not have therapeutic benefit, and the panel cannot suggest offering as an option.

Passive Physical Modalities

Key Question 21

Should LLLT be used for persistent (>3 months) grades I to II NAD?

More high-quality studies are needed in this area before certainty in judgments or recommendations can be made.

Key Question 22

Should transcutaneous electrical nerve stimulation vs multimodal soft tissue therapy program be used for persistent (>3 months) grades I to II NAD?

More high-quality studies are needed in this area before certainty in judgments or recommendations can be made.

Key Question 23

Should cervical traction be used for grade III NAD (variable duration)?

More high-quality studies are needed in this area before certainty in judgments or recommendations can be made.

Multimodal Care

Key Question 24

Should multimodal care vs continued practitioner care be used for persistent grades I to III NAD?

Recommendation

For patients presenting with persistent neck pain grades I to III, the panel suggests clinicians offer multimodal care* and/or practitioner advice† based on patient preference. (*Weak recommendation, low-quality evidence*)

Remark

*Multimodal care and exercises may consist of thrust/nonthrust joint manipulation, muscle energy, stretching, and home exercises (cervical retraction, deep neck flexor strengthening, cervical rotation ROM).

†Multimodal minimal intervention may consist of postural advice, encouragement to maintain neck motion and daily activities, cervical rotation ROM exercise, instructions to continue prescribed medication, and therapeutic pulsed (10%) ultrasound at 0.1 W/cm^2 for 10 minutes applied to the neck and cervical ROM exercises.

Exercise

Key Question 25

Should group exercises vs education or advice be used for workers with persistent neck and shoulder pain?

Recommendation

For workers with persistent neck and shoulder pain, the panel suggests mixed supervised and unsupervised high-intensity strength training or advice alone. (*Weak recommendation, moderate-quality evidence*)

Remark

For reduction in pain intensity, 3 sessions per week, each lasting 20 minutes, over a 20-week period. Exercise includes strengthening. Extra resources are likely required for complete exercise intervention implementation.

Structured Patient Education

Key Question 26

Should structured patient education vs exercise programs be used for persistent (>3 months) NAD in workers?

The panel determined moderate certainty in the clinical evidence, with small desirable and undesirable effects of the intervention. The resources required are relatively small, assuming the practitioner presents the education to the patient. Health inequities would be positively affected, and the intervention would be acceptable to stakeholders and feasible to implement. The panel decided not to repeat these findings in the current section. The panel felt that the benefits of increasing the frequency and intensity of exercise regimes was not restricted to those working in an industrial environment or to any specific population subgroup with the exception of older adults.

Work Disability Prevention Interventions

Key Questions 27-29

Should work-based hardening vs clinic-based hardening be used for persistent (>3 months) work-related rotator cuff tendinitis?

Should work disability prevention interventions be used for persistent neck and shoulder pain?

Should work disability prevention interventions be used for persistent (>3 months) upper extremity symptoms?

The guideline panel was unable to formulate recommendations for these key questions, yet future research is very likely to either positively or negatively support the various types of work disability prevention interventions.

Recommendations for Persistent (>3 Months) Grades I to III WAD

Exercise

Key Question 30

Should supervised general exercise and advice vs advice alone be used for persistent (>3 months) grades I to II WAD?

Recommendation

For patients with persistent (>3 months) grades I to II WAD, the panel suggests supervised exercises with advice or advice alone based on patient preference and resources available. (*Weak recommendation, low-quality evidence*)

Remark

Extra resources may be required for supervised exercises.

Multimodal Care

Key Question 31

Should multimodal care vs self-management program be used for persistent (>3 months) grade II WAD?

Overall, the balance between the desirable and undesirable consequences is uncertain, and no recommendation is given at this time. Further studies need to be conducted in this area and should involve multimodal care including high-velocity procedures or manipulation.

Education

Key Question 32

Should structured patient education vs advice be used for persistent (>3 months) WAD?

The panel determined that this key question had substantial overlap with Key Question 5 and decided to make one recommendation addressing both topics.

Definitions

Grading of Recommendations Assessment, Development and Evaluation (GRADE) Definitions of Ratings of the Certainty of the Evidence.

High	This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different is low.
Moderate	This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different is moderate.
Low	This research provides some indication of the likely effect. However, the likelihood that it will be substantially different (a large enough difference that it might have an effect on a decision) is high.
Very low	This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different (a large enough difference that it might have an effect on a decision) is very high.

Strength of the Recommendations

- Strong recommendation can be made when the desirable consequences clearly outweigh the undesirable consequences.
- Weak recommendation is made when, on the balance of probabilities, the desirable consequences likely outweigh the undesirable consequences.

Clinical Algorithm(s)

The following algorithms are provided in the original guideline document:

- Algorithm of CCGI recommendations for managing neck pain–associated disorder grades I to III
- Algorithm of CCGI recommendations for whiplash and associated disorders (grades I to III)

Scope

Disease/Condition(s)

- Neck pain-associated disorders (NADs)
- Whiplash-associated disorders (WADs)

Guideline Category

Assessment of Therapeutic Effectiveness

Management

Rehabilitation

Treatment

Clinical Specialty

Chiropractic

Family Practice

Physical Medicine and Rehabilitation

Intended Users

Advanced Practice Nurses

Chiropractors

Health Care Providers

Physical Therapists

Physician Assistants

Physicians

Guideline Objective(s)

To synthesize and disseminate the best available evidence on the management of adults and elderly patients with recent onset (0-3 months) and persistent (>3 months) neck pain and its associated disorders, with the goal of improving clinical decision making and the delivery of care for patients with neck pain-associated disorder (NAD) and whiplash-associated disorder (WAD) grades I to III

Target Population

Adults and elderly patients with recent onset (0-3 months) and persistent (>3 months) neck pain-associated disorders and whiplash-associated disorders

Interventions and Practices Considered

1. Neck manipulation
2. Neck mobilization
3. Integrated neuromuscular inhibition technique
4. Multimodal care
5. Intramuscular ketorolac
6. Patient education
7. Self-management
8. Home exercises
9. Medication
10. Supervised exercises (graded strengthening exercises, yoga, qigong, range-of-motion exercises)
11. Advice alone
12. Cervical collar

13. Low-level laser therapy
14. Work disability prevention interventions
15. Massage
16. Transcutaneous electrical nerve stimulation (TENS)
17. Soft tissue therapy program
18. Stress self-management
19. Cervical traction

Note: The guideline panel was unable to make recommendations for or against some of the interventions listed above because of insufficient evidence; see the "Major Recommendations" field for full context.

Major Outcomes Considered

- Pain intensity
- Disability
- Health-related quality of life
- Global perceived effect
- Adverse effects

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Key Question Development

Six topic areas (exercise, multimodal care, education, work disability, manual therapy, passive modalities) on the conservative management of neck pain-associated disorders (NAD) and whiplash-associated disorders (WAD) grades I to III were covered in 5 recent systematic reviews by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. The panel met over 2 days in June 2015 to brainstorm about potential key questions (see Table 2 in the original guideline document).

Search Update and Study Selection

The panel assessed the quality of eligible systematic reviews using the AMSTAR tool and its 11 criteria.

Because the last search dates of included systematic reviews were 2012, 2013, and 2014, the panel updated the literature searches in Medline and Cochrane Central databases on December 24, 2015 using the published search strategies. The panel used a 2-phase screening process to select additional eligible studies. In phase 1, two independent reviewers screened titles and abstracts to determine the relevance and eligibility of studies. In phase 2, the same pairs of independent reviewers screened full-text articles to make a final determination of eligibility. Reviewers met to resolve disagreements and reach consensus on the eligibility of studies in both phases, with arbitration by a third reviewer if needed. Studies were included if they met the PICO (population, intervention, comparator, outcome) criteria and were randomized controlled trials (RCTs) with an inception cohort of at least 30 participants per treatment arm with the specified condition, because this sample size is considered the minimum needed for non-normal distributions to approximate the normal distribution.

Number of Source Documents

Study Selection and Quality Assessment: Ontario Protocol for Traffic Injury Management (OPTIMa) Reviews

OPTIMa searches yield 26,335 articles screened. After removal of duplicates and screening, After removal of duplicates and screening, 26 273 articles did not meet selection criteria, leaving 109 articles eligible for critical appraisal. Fifty-nine studies (62 articles) published from 2007 to 2013

were deemed scientifically admissible and included in the synthesis. Each review used was rated as either moderate or high quality (AMSTAR score 8-11).

Search Update and Study Selection

The updated search yielded 7784 articles. A total of 1411 duplicates were removed and 6373 articles were screened for eligibility (see Figs. 1-5 in the original guideline document). After screening, 6321 articles did not meet the selection criteria (phase 1), leaving 52 articles for full-text review (phase 2) and critical appraisal (studies on the topic of multimodal care (n = 12), structured patient education (n = 3), exercise (n = 8), work disability interventions (n = 13), manual therapy (n = 4), soft tissues (n = 2), and passive modalities (n = 6). Of the 52 randomized controlled trials (RCTs), 4 scientifically admissible studies were included in the synthesis. The remaining articles failed to address the key question (n = 1); selected population (n = 2), outcomes (n = 13), or intervention (n = 11); had no between estimates (n = 19); or were duplicates (n = 1) or a secondary analysis of an included study (n = 1) (see Appendix 5 in the original guideline document).

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Grading of Recommendations Assessment, Development and Evaluation (GRADE) Definitions of Certainty of Evidence

High	This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different is low.
Moderate	This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different is moderate.
Low	This research provides some indication of the likely effect. However, the likelihood that it will be substantially different (a large enough difference that it might have an effect on a decision) is high.
Very low	This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different (a large enough difference that it might have an effect on a decision) is very high.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Abstraction and Quality Assessment

Data were extracted from the included studies identified in each of the 5 systematic reviews, including study design, participants, intervention, control, outcomes, and funding.

The internal validity of included studies was assessed by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration using the Scottish Intercollegiate Guidelines Network (SIGN) criteria.

For articles retrieved from the updated search, pairs of independent reviewers critically appraised the internal validity of eligible studies using the SIGN criteria, similar to the OPTIMa collaboration reviews. Reviewers reached consensus through discussion. A third reviewer was used to resolve disagreements if consensus could not be reached. A quantitative score or a cutoff point to determine the internal validity of studies was not used. Instead, the SIGN criteria were used to assist reviewers in making an informed overall judgment on the risk of bias of included studies.

Synthesis of Results

One reviewer extracted data from scientifically admissible studies into evidence tables. A second reviewer independently checked the extracted

data. The panel performed a qualitative synthesis of findings and stratified results based on the type and duration of the disorder (i.e., recent [symptoms lasting <3 months] versus persistent [symptoms lasting >3 months]).

Recommendation Development

The panel used the Guideline Development Tool, and assessed the quality of the body of evidence for the outcomes of interest by applying the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. The panel used the evidence profiles to summarize the evidence. The quality of evidence rating (high, moderate, low, or very low [see the "Rating Scheme for the Strength of the Evidence" field]) reflects the panel's confidence in the estimate of the effect to support a recommendation and considers the strengths and limitations of the body of evidence stemming from risk of bias, imprecision, inconsistency, indirectness of results, and publication bias. Assessment of quality of evidence was carried out in the context of its relevance to the primary care setting.

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Selection of Guideline Development Panelists

The Canadian Chiropractic Guideline Initiative (CCGI) project lead appointed 2 co-chairs for the guideline development group and nominated the project executive committee and the remaining guideline panelists. To ensure a broad representation, the guideline panel included clinicians, clinician researchers, methodologists, a professional leader/decision maker, and one patient advocate to ensure that patient values and preferences were considered. One observer monitored the 3 face-to-face meetings of the guideline panel held in Toronto (June and September 2015 and April 2016).

Recommendation Development

Using the Evidence to Decisions (EtD) Framework the panel formally met in September 2015 and April 2016 to consider the balance of desirable and undesirable consequences to determine the strength of each recommendation, using informed judgment on the quality of evidence and effect sizes, resource use, equity, acceptability, and feasibility. To make a recommendation, the panel needed to express an average judgment that was beyond neutral with respect to the balance between desirable and undesirable consequences of an intervention, as outlined in the EtD. The panel defined the strength rating of a recommendation (strong or weak [see the "Rating Scheme for the Strength of the Recommendations" field]) as the extent to which the desirable consequences of an intervention outweigh its undesirable consequences. A strong recommendation can be made when the desirable consequences clearly outweigh the undesirable consequences. In contrast, a weak recommendation is made when, on the balance of probabilities, the desirable consequences likely outweigh the undesirable consequences.

The panel provided recommendations based on the evidence if statistically and clinically significant differences were found. The panel followed a 2-step process in making a recommendation. The panel first agreed that there should be evidence of clinically meaningful changes occurring over time in the study population and that a single consensus threshold of clinical effectiveness should be applied consistently. They reached a consensus decision that a 20% change in the outcome of interest within any study group was required to make a recommendation. The decision to use a 20% threshold was informed by current published reports and relevant available minimal clinically important differences (MCIDs).

However, MCIDs can vary across populations, settings, and conditions and depending on whether within-group or between-group differences are being assessed. Therefore, the panel considered MCID values for the most relevant outcomes (i.e., 10% for visual analog scale [VAS] or Neck Disability Index [NDI; 5/50 on the NDI], 20% for numerical rating scale [NRS]) and chose the more conservative of these values as the threshold when evaluating between group differences.

Second, the results from relevant studies were used to formulate a recommendation where appropriate. A treatment determined to be effective (with statistically significant differences between baseline and follow-up scores and clinical significance based on the MCID applied in the study) was recommended by the panel. If a study found 2 or more treatments to be equally effective based on the threshold, then the panel recommended all equivalently effective treatments.

The EtD Frameworks were completed and recommendations were drafted over a series of conference calls with panel members after making judgments about 4 decision domains: quality of evidence (confidence in estimates of effect); balance of desirable (e.g., reduced pain and disability)

and undesirable outcomes (e.g., adverse reactions); confidence about the values and preferences for the target population; and resource implications (costs). A synthesis of the panelists' judgments about the domains determined the direction (i.e., for or against a management approach) and the strength of recommendations (the extent to which one can be confident that the desirable consequences of an intervention outweigh the undesirable consequences). A specific format was followed to formulate recommendations using patient description and the treatment comparator. Remarks were added for clarification if needed. If the desirable and undesirable consequences were judged to be evenly balanced and the evidence was not compelling, the panel decided not to write any recommendation.

A modified Delphi technique was used at an in-person meeting to achieve consensus on each recommendation. Using an online tool , panelists voted their level of agreement with each recommendation (including quality of evidence and strength of recommendation) based on a 3-point scale (yes, no, neutral). Before voting, panelists were encouraged to discuss and provide feedback on each recommendation in terms of suggested wording edits or general remarks. To achieve consensus and be included in the final manuscript, each recommendation had to have at least 80% agreement with a response rate of at least 75% of eligible panel members. All recommendations achieved consensus in the first round.

Rating Scheme for the Strength of the Recommendations

Strength of the Recommendations

- Strong recommendation can be made when the desirable consequences clearly outweigh the undesirable consequences.
- Weak recommendation is made when, on the balance of probabilities, the desirable consequences likely outweigh the undesirable consequences.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

Peer Review

A 10-member external committee composed of stakeholders, end-users, and researchers from Canada, the United States, and Lebanon (see Appendix 2 in the original guideline document) independently reviewed the draft manuscript, recommendations, and supporting evidence. The Appraisal of Guidelines Research and Evaluation (AGREE) II instrument was used to assess the methodological quality of the guideline. Feedback received was collected and considered in a revised draft for a second round of review. Chairs of the guideline panel provided a detailed response to reviewers' comments.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Effective treatment of both recent-onset and persistent neck pain through use of a multimodal approach including manual therapy, self-management advice, and exercise

Refer to the "Summary of Evidence" sections following each key question for a discussion of benefits of specific interventions reported in the reviewed studies. See also the "Benefits of Physical Activity and Self-management" section in the original guideline document.

Potential Harms

Adverse Events

This guideline did not specifically review the evidence on adverse events from treatments. However, in the systematic review on manual therapy and passive modalities, 22 of the low risk of bias randomized controlled trials (RCTs) addressed the risk of harm from conservative care. Most adverse events were mild to moderate and transient (mostly increased stiffness and pain at the site of treatment, with a mean rate of about 30%). No serious neurovascular adverse events were reported. Another review of published RCTs and prospective cohort studies confirmed that around half of people treated with manual therapy can expect minor to moderate adverse events after treatment, but that the risk of major adverse events is small. The pooling of data from RCTs of manual therapy on the incidence of adverse events indicated that the relative risk of minor or moderate adverse events was similar for manual therapy and exercise treatments, and for sham/passive/control interventions.

A patient-centered holistic and collaborative view of the needs of the patient with pain and disability is encouraged. Although chiropractors are not responsible for pharmacologic management, they should have sufficient knowledge about pharmacologic agents and their adverse events. One eligible RCT found home exercises and advice to be as effective as medication (acetaminophen, nonsteroidal anti-inflammatory drugs [NSAIDs], muscle relaxant, and opioid analgesic) in reducing pain and disability at short term for patients with acute or subacute neck pain grades I to II. However, medication was associated with a higher risk for adverse events. Of interest, recent evidence suggests that acetaminophen is not effective or managing low back pain, and the effectiveness of long-term opioid therapy for improving chronic pain and function is uncertain. However, a dose-dependent risk for serious harms is associated with long-term use of opioid (increased risk for overdose, opioid abuse and dependence, fractures, myocardial infarction, and use of medications to treat sexual dysfunction). Risk of unintentional opioid overdose injury appears to be particularly important in the first 2 weeks after initiation of long-acting agents.

Refer to the "Summary of Evidence" sections following each key question for a discussion of harms of specific interventions reported in the reviewed studies.

Qualifying Statements

Qualifying Statements

- Although all recommendations included in this guideline are based on low risk of bias randomized controlled trials (RCTs), the overall quality of evidence is generally low considering other factors considered by Grading of Recommendations Assessment, Development and Evaluation (GRADE) such as imprecision, and thus the strength of recommendations is weak at this time. Weak recommendations mean that clinicians need to devote more time to the process of shared decision making and ensure that the informed choice reflects patient values and preferences. Interventions not described in this guideline cannot be recommended for the management of patients with neck pain-associated disorder (NAD) or whiplash-associated disorder (WAD) because of a lack of evidence about their effectiveness and safety (see Table 16 in the original guideline document).
- Because no novel human participant intervention was required and secondary analyses were considered, the research presented in this guideline is exempt from institutional ethics review board approval.

Limitations of the Guideline

Shortcomings for this guideline include the low quantity and quality of supporting evidence found during the searches. Most of the downgrading of evidence supporting the outcomes occurred because of imprecision. In addition, the updated search of the published reports included 2 databases (Medline and Cochrane Central Register of Controlled Trials) but was limited to the English published reports, which possibly excluded some relevant studies. This, however, is an unlikely source of bias. Qualitative studies that explored the lived experience of patients were not included. Thus, this review cannot comment on how patients valued and experienced their exposure to manual therapies or passive physical modalities. Although the composition of the guideline panel was diverse, with experienced methodologists, expert clinicians, and stakeholder and patient representatives, only one member was from another health discipline (physiotherapist). The scope of this guideline focused on selected outcomes

such as pain and disability, although included studies assessed several additional outcomes.

Guideline Disclaimer

- The evidence-based practice guidelines published by the Canadian Chiropractic Guideline Initiative (CCGI) include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options. Guidelines are intended to inform clinical decision making, are not prescriptive in nature, and do not replace professional chiropractic care or advice, which always should be sought for any specific condition. Furthermore, guidelines may not be complete or accurate because new studies that have been published too late in the process of guideline development or after publication are not incorporated into any particular guideline before it is disseminated. CCGI and its working group members, executive committee, and stakeholders (the "CCGI Parties") disclaim all liability for the accuracy or completeness of a guideline, and disclaim all warranties, expressed or implied. Guideline users are urged to seek out newer information that might impact the diagnostic and/or treatment recommendations contained within a guideline. The CCGI Parties further disclaim all liability for any damages whatsoever (including, without limitation, direct, indirect, incidental, punitive, or consequential damages) arising out of the use, inability to use, or the results of use of a guideline, any references used in a guideline, or the materials, information, or procedures contained in a guideline, based on any legal theory whatsoever and whether or not there was advice of the possibility of such damages.
- Through a comprehensive and systematic literature review, CCGI evidence-based clinical practice guidelines incorporate data from the existing peer-reviewed literature. This literature meets the prespecified inclusion criteria for the clinical research question, which CCGI considers, at the time of publication, to be the best evidence available for general clinical information purposes. This evidence is of varying quality from original studies of varying methodological rigor. CCGI recommends that performance measures for quality improvement, performance-based reimbursement, and public reporting purposes should be based on rigorously developed guideline recommendations.

Implementation of the Guideline

Description of Implementation Strategy

Dissemination and Implementation Plan

Evidence-based practice aims to improve clinical decision making and patient care. When followed, clinical practice guidelines (CPGs) have the potential to improve health outcomes and the efficiency of the health care system. However, low adherence to CPGs has been noted across health care sectors and in the management of musculoskeletal conditions, including neck pain-associated disorders (NADs) and whiplash-associated disorders (WADs). Such gaps contribute to wide geographic variations in the use and quality of health care services.

Efforts to bridge the "research-practice gap" have led to a growing interest in knowledge translation (KT). *Knowledge translation* is defined as the exchange, synthesis, and ethically sound application of knowledge to improve health and provide more effective health services. Knowledge translation aims to bridge the research-practice gap and improve patient outcomes by promoting the integration and exchange of research and evidence-based knowledge into clinical practice.

To prepare for guideline implementation, the Canadian Chiropractic Guideline Initiative (CCGI) considered the Guideline Implementation Planning Checklist and available strategies and supporting evidence to increase guideline uptake. Although effects of KT interventions tend to be modest, they are likely important at a population health level.

To raise awareness, chiropractic professional organizations are encouraged to inform their members of new CCGI guidelines and tools easily accessible on CCGI Web site . The guideline implementation tools framework was used to clarify the objectives of the tools; identify end users and the context and setting where tools will be used; provide instructions for use; and describe methods to develop the tools and related evidence and to evaluate the tools. Implementation tools designed to increase guideline uptake include practitioner and patients' handouts (see Fig. 8, Appendix 7 in the original guideline document); algorithms (see Figs. 6 and 7 in the original guideline document), webinars, videos, and learning modules ; point-of-care checklists; and health status reminders. The CCGI has established a network of opinion leaders across Canada. Based on successful efforts to implement a WAD guideline in Australia using opinion leaders among regulated physiotherapists, chiropractors, and osteopaths, the CCGI is planning a series of implementation studies among Canadian chiropractors. The CCGI will also pilot within chiropractic practice-based research networks. Monitoring guideline use in chiropractic is challenging because the use of electronic health records to routinely collect clinical practice information is not common in Canada and those using electronic health records often collect different indicators. Nonetheless, the frequency of downloads (posting of the open access guideline on the CCGI Web site) and number of registering participants and completion of educational online material (webinar, video, and learning module) will be

monitored monthly as proxy measures of guideline uptake.

Implementation Tools

Clinical Algorithm

Quick Reference Guides/Physician Guides

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

BussiÃ¨res AE, Stewart G, Al-Zoubi F, Decina P, Descarreaux M, Hayden J, Hendrickson B, HincapiÃ© C, PagÃ© I, Passmore S, Srbely J, Stupar M, Weisberg J, Ornelas J. The treatment of neck pain-associated disorders and whiplash-associated disorders: a clinical practice guideline. J Manipulative Physiol Ther. 2016 Oct;39(8):523-64. [189 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

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Guideline Developer(s)

Canadian Chiropractic Guideline Initiative - Clinical Specialty Collaboration

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Guideline Committee

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Financial Disclosures/Conflicts of Interest

All Canadian Chiropractic Guideline Initiative (CCGI) members, including guideline panelists and peer reviewers, were required to disclose any potential conflict of interest by topic before participation and during the guideline development process. There was no self-declaration of conflicts of interest among the panel or the reviewers.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Bryans R, Decina P, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg RP, Shaw L, Watkin R, White E. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. J Manipulative Physiol Ther. 2014 Jan;37(1):42-63. [104 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the Journal of Manipulative and Physiological Therapeutics Web site.

Availability of Companion Documents

Summaries of the recommendations for practitioners are provided in Appendix 7 of the original guideline document.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI on January 19, 2006. The information was verified by the guideline developer on February 1, 2006. This NGC summary was updated by ECRI Institute on April 3, 2014. The information was verified by the guideline developer on April 8, 2014. This summary was updated by ECRI Institute on March 28, 2017. The updated information was verified by the guideline developer on April 4, 2017.

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